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March 19, 2010

Ms. Wendy Cheung
US EPA
1595 Wynkoop Street
Denver, CO 80202

RE: Seismic Risk for East Cherry Creek Valley Water and Sanitation District Injection Wells

Dear Ms. Cheung:

As requested, we are providing additional information regarding the risk of seismic events associated with the construction and use of Class I injection wells as described in the recent application by East Cherry Creek Valley Water and Sanitation District (ECCV).

In summary, Hydrokinetics and Peterson Energy Management have researched the issue and have concluded the probability that ECCV's injection wells will cause earthquakes is very low.

The ECCV injection wells are to be located about one mile east of Brighton in the DJ Basin which is generally located in the northeast section of Colorado. The basin consists of a thick section (up to about 12,000 feet) of sedimentary rocks that overlay a crystalline Precambrian bedrock. Interviews with local oil/gas engineers and Colorado Oil and Gas Conservation Commission (COGCC) personnel, indicate that underground injection (UI) wells have been injecting fluids into the deep sedimentary formations in the DJ Basin since the 1950's. Currently there are hundreds of UI wells permitted by the COGCC operating in the area. These wells mainly inject fluids (oil production water, drilling mud, etc.) into formations that are about 6,000 to 10,000 feet deep. The ECCV wells will be injecting into the same sedimentary formations, generally in the 9,000 to 10,500 foot range. There is also one UI well permitted by the EPA in the area. This well (Suckla Farms well) is located about 9 miles from the ECCV site. It has been injecting fluids underground since about 1990 and is still in use today. To my knowledge, injection into this well has caused no earthquakes.

The ECCV wellsite and the nearby UI wells permitted by the EPA and the COGCC are shown on the attached map. In the area surrounding the ECCV site, which includes Adams, Arapahoe, Weld, Morgan, Logan, and Washington counties, there are approximately 614 UI wells listed as permitted by the COGCC and one UI well permitted by the EPA (see attachment). These sedimentary wells have been injecting fluids underground for many decades and, to my knowledge, said injection has never been associated with an earthquake or seismic event. Interviews with COGCC and EPA

personnel confirm this.

However, fluids injected into a well on the Rocky Mountain Arsenal well do appear to have caused earthquakes in the 1960's. This well did not inject fluid into the sedimentary rocks. It injected fluids into faulted Precambrian crystalline basement rocks at the 12,000 foot level that have virtually no primary porosity. The fluids injected into such brittle igneous and metamorphic rocks have no place to go except into areas with secondary porosity (i.e., fractures or faults). As fluid is injected into these fractures, they tend to open and reduce the forces that hold the rocks in place. This can sometimes allow the rocks to slide past each other causing earthquakes.

In the case of the ECCV injection wells, the porosity of the sedimentary target formations involved ranges from 6 to 14 percent. The injectate in such wells actually flows through the rock itself. This lessens the likelihood that the rocks will rupture and cause earthquakes. Also, the bottom of the ECCV wells will be at least 1000 feet above the top of the Precambrian basement rock that served as the injection zone for the Arsenal well. Therefore, there is a buffer zone at least 1000 feet thick that will prevent water in the ECCV wells from reaching the basement rock.

As discussed in our application, Peterson Energy Management analyzed the faulting in the area of the ECCV wells. They concluded that there was no evidence of faulting in the deep target formations within a 15 mile radius of the ECCV site.

In conclusion, we believe it is very unlikely that ECCV's UI wells will cause earthquakes. This is primarily based on the fact that:

1. No faulting has been identified in or near the ECCV site in the relevant deep formations.

2. To our knowledge, underground injection wells have been operating in the DJ Basin since the 1950's, and have not been associated with earthquakes.

2. There are currently hundreds of permitted injection wells operating in the DJ Basin (up to 615 wells in nearby counties). Fluids have been injected into these wells for many decades and, to my knowledge, said injection (excluding the Arsenal well) has never been associated with an earthquake or seismic event. Interviews with COGCC and EPA personnel confirm this.

3. To our knowledge, a class I EPA-permitted injection well, located about 9 miles from the ECCV site, has been injecting fluids for about 20 years without causing earthquakes.

After well construction and testing, it is our intent to begin injecting at a relative low flow rate. Over a period of months, the injection rate will be gradually increased. During injection, ECCV will monitor seismic activity in the area through the School of Mines National Earthquake Information

Center. If any increase in seismic activity is detected in the area, ECCV will immediately notify the EPA.

If you have any questions, please call.

Sincerely,

Pat OB

Patrick OBrien, PE, CPGS